

REMARKS/ARGUMENTS

Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47, 51-59 and 63-66 are pending in this application. The Office Action dated September 11, 2006 issued the final rejection on these claims. On December 22, 2006, Applicant filed a Notice of Appeal to appeal from the final rejection, along with a Pre-Appeal Brief Request for Review. The Panel Decision from the Pre-Appeal Brief Review dated February 2, 2007 continued to maintain the rejection of Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47, 51-59 and 63-66. On February 21, 2007, subsequent to the filing of the Notice of Appeal but prior to filing any Appeal Brief, Applicant submitted an Amendment Under 37 C.F.R. § 41.33(a) to correct certain informalities in Claims 14 and 53, which were objected to by the Examiner in the September 11, 2006 Office Action. In response, the Examiner issued an Advisory Action, which was mailed on March 12, 2007, indicating that this Amendment would be entered for the purpose of appeal. No other amendment has been filed subsequent to the final rejection. Instead of filing an Appeal Brief at this point, Applicant seeks to re-open prosecution in this application and respectfully submits herewith a Request for Continued Examination of the present application along with this Reply to the September 11, 2006 Office Action.

Claims 2-4, 6-12, 15-22, 24-26, 28, 32-36, 38-41, 48-50 and 60-62 were previously canceled without prejudice. Of those canceled claims, Claims 6-12, 15-22, 28, 32-36 and 38-41 were previously withdrawn in response to the restriction requirement and were subsequently canceled without prejudice in response to the Examiner's request in the Office Action dated March 3, 2006. Applicant filed a divisional application (U.S.

application Serial No. 11/607,412) on December 1, 2006 to pursue the claims comparable in scope to some of the canceled claims in the present application.

In connection with submission of this Reply, Applicant, Dr. Pedro M. Buarque de Macedo, respectfully submits herewith his Declaration pursuant to 37 C.F.R. § 1.132 (“the Macedo Declaration”). The Macedo Declaration is based on Dr. Macedo’s review and understanding of the September 11, 2006 Office Action and the prior art references relied upon by the Examiner therein as well as his general knowledge as one of ordinary skill in the relevant art.

Favorable consideration and prompt allowance of all of the pending claims in view of the following remarks and the Macedo Declaration are respectfully requested.

Applicant respectfully responds to the September 11, 2006 Office Action as follows:

Claim Objections

In the September 11, 2006 Final Office Action, the Examiner objected to Claims 14 and 53 for reciting “said tension member is comprised of tension bolts” and stated that it would appear that a “tension member” is comprised of a tension bolt. Sept. 11, 2006 Final Office Action at 2. It is respectfully submitted that Applicant’s February 21, 2007 Amendment Under 37 C.F.R. § 41.33(a) has already addressed the objection by incorporating the Examiner’s suggested correction in Claims 14 and 53. The Advisory Action dated March 12, 2007 indicated that this Amendment would be entered for the purpose of appeal and that no claim objection remains. Accordingly, for the purpose of this Reply, Applicant presumes that the Examiner’s objections to Claims 14 and 53 have

been withdrawn, and respectfully requests for such withdrawal if the objections are still pending.

Claim Rejections - 35 U.S.C. § 103:

A. In the September 11, 2006 Office Action, the Examiner rejected Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47, 51-59 and 63-66 as being unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 4,324,037 to Grady, II ("the Grady '037 Patent") in view of either U.S. Patent No. 3,292,316 to Zeinetz ("the Zeinetz '316 Patent") or U.S. Patent No. 4,450,656 to Lagendijk ("the Lagendijk '656 Patent") when considering either U.S. Patent No. 4,124,365 to Williams et al. ("the Williams '365 Patent") or U.S. Patent No. 3,056,184 to Blaha ("the Blaha '184 Patent"), and further considering any of U.S. Patent No. 3,459,565 to Jones et al. ("the Jones '565 Patent"), U.S. Patent No. 3,592,619 to Elmer et al. ("the Elmer '619 Patent"), and U.S. Patent No. 2,758,937 to Ford ("the Ford '937 Patent"). See September 11, 2006 Office Action at 2-5. Applicant respectfully traverses this rejection for the following reasons.

It is respectfully submitted that none of the combinations of the above references relied upon by the Examiner renders Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47, 51-59 and 63-66 obvious under the flexible approach recently set forth by the U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, No. 04-1350, 2007 U.S. LEXIS 4745, slip op. (U.S. Apr. 30, 2007), since the Examiner has not provided any evidence that the alleged combinations do no more than yield predictable results leading to the claimed invention set forth in these claims. See *id.* at 12-13. Furthermore, even if the combinations were obvious, which Applicant contends that they are not, that still does not establish that the claims encompass obvious subject matter. Cf. *id.* at 19-20. In

addition, the Examiner has not shown that the practice of the claimed invention based on the teachings of the alleged combinations is within the skill of a person of ordinary skill in the art. *See id.* at 13. The fact that some of the above references in fact teach away from the alleged combinations further supports Applicant's position that the elements of the claimed invention set forth in the claims work together in an unexpected and fruitful manner and are therefore not obvious over the above references relied upon by the Examiner. *See id.* at 12.

**1. Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47,
51-59 and 63-66 Are Patentable Over the Prior Art**

**(a) Prior Art Does Not Teach or Suggest the
Claimed Range of Prestress Compression**

In the rejection of Claims 1, 5, 13, 14, 23, 27, 29-31, 37 and 42-47, 51-59 and 63-66 under 35 U.S.C. § 103(a), the Examiner relies on 12 possible combinations of eight prior art references: The Grady '037 Patent in combination with the Zeinetz '316 Patent or the Lagendijk '656 Patent, further in combination with the Williams '365 Patent or the Blaha '184 Patent, and further in combination with the Jones '565 Patent, the Elmer '619 Patent, or the Ford '937 Patent. *See* September 11, 2006 Office Action at 2-3. Even with such extensive combinations of multiple references, it is respectfully submitted that the Examiner fails to establish a *prima facie* case of obviousness.

To establish *prima facie* obviousness of a claimed invention under 35 U.S.C. § 103, **all** the claim limitations must be taught or suggested by the prior art. *See CFMT, Inc. v. YieldUp Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974); *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 2143.03 (8th ed. 2006). However, as shown below, none of the prior art relied upon by the Examiner

teaches or suggests, either individually or in combination, a prestressed foam glass tile having any amount of prestress compression, let alone a prestressed foam glass tile having a prestress compression of 4,000 psi or greater, a key limitation in all of the independent claims pending in this application, Claims 1, 23, 42 and 54. See Macedo Declaration, par. 5.

By the Examiner's own admission, the first reference upon which he relies, the Grady '037 Patent, does not disclose a foam glass tile. See September 11, 2006 Office Action at 3; *see also* Macedo Declaration, par. 6. In an effort to combine with other references to obtain a foam glass tile under prestress compression, the Examiner notes that "each of Zeinetz and Lagendijk teach utilization of foamed glass tiles or blocks within a tensioned structural arrangement," *id.*, and takes the position that "each of Lagendijk '656 and Zeinetz '316 does indeed, disclose prestressing of a foamed glass material as is set forth in the above rejection." *Id.* at 10. However, it is respectfully submitted that the Examiner's position is erroneous. Neither reference teaches the prestressing of a foam glass tile. See Macedo Declaration, par. 7.

To support his position that the Zeinetz '316 Patent discloses prestressing of a foam glass material, the Examiner points to tension bars 36, 39 in FIG. 11 of the Zeinetz '316 Patent and asserts that these tension members hold foam glass tiles, citing Col. 4, lines 5-9 of the Patent. See *id.* at 3. However, contrary to the Examiner's assertion, FIG. 11 does not teach or even suggest the prestressing of a foam glass tile under any amount of prestress compression. See Macedo Declaration, par. 8.

The Zeinetz '316 Patent is directed to a roof structure, as shown in FIGS. 1 and 2 of the Patent. In conjunction with FIG. 5, the Zeinetz '316 Patent further teaches that the seam 19, 119, 21 and 121 is adapted to fit the abutting lateral edge portions of adjacent roof elements (e.g., a1, a2, b2, c1, c2, and d in FIG. 5). See Zeinetz '316 Patent, Col. 3, lines 1-7. FIG. 11 illustrates the section of FIG. 5 along the line B--B and represents "coupling means" for abutting roof elements. *Id.*, Col. 2, lines 4-6 (emphasis added). In fact, the Zeinetz '316 Patent explicitly describes the tension bars 36 and 39 in FIG. 11 as "a locking means for use in connection with a U-shaped or tubular seam 19e, 119e, 21e and 121e." *Id.*, Col. 3, line 73 - Col. 4, line 4. In other words, the tension bars 36 and 39 in FIG. 11 are merely coupling or connecting means in conjunction with the U-shaped/tubular seam 19, 119, 21, 121 to keep adjacent roof elements together. Nowhere in the Zeinetz '316 Patent is there any teaching or suggestion that the tension bars 36, 39 in FIG. 11 to which the Examiner points are the means for prestressing foam glass tiles, let alone providing prestress compression of 4,000 psi or greater. See Macedo Declaration, par. 8.

It is also noted that the Zeinetz '316 Patent teaches that the rows of interengaging profiles 19, 119, 21, 121 which keep each roof element in wedged engagement with the adjacent elements may render possible the "prestressing of the shell of the cupola." Zeinetz '316 Patent, Col. 3, lines 7-17. As supported by the Macedo Declaration, it would be clear to those skilled in the art that such "prestressing of the shell of the cupola" only refers to providing a structural support to a dome by keeping all the roofing elements together in wedged engagement, hence "self-supporting roof" as the title of the

Zeinetz '316 Patent. However, this is different from the prestressing as applied to foam glass tiles to strengthen them in accordance with the present invention. *See* Macedo Declaration, par. 9; *see also* EDWARD G. NAWY, PRESTRESSED CONCRETE: A FUNDAMENTAL APPROACH 8-10 (1989) (defining prestressing as used in the present application). Accordingly, one skilled in the art would understand that the “prestressing of the shell of the cupola” arising from wedged engagement of neighboring roof elements as suggested by the Zeinetz '316 Patent does not refer to the kind of prestressing applied to foam glass tiles as claimed in the present application and therefore does not render the claimed prestressed foam glass tile obvious. *See* Macedo Declaration, par. 9. Furthermore, one skilled in the art would also understand that the wedged engagement with neighboring elements as shown in the Zeinetz '316 Patent cannot possibly provide a prestress compression of 4,000 psi or greater. *See* Macedo Declaration, par. 9. Therefore, it is respectfully submitted that the Zeinetz '316 Patent does not teach or even suggest at all the prestressing of a foam glass tile under a prestress compression of 4,000 psi or greater as required by all of the pending claims.

Moreover, the Zeinetz '316 Patent teaches a litany of roofing materials that could be used, including glass, wood, synthetic plastic, concrete, porous concrete, foamed plastic, foamed glass, cardboard, sheet metal, wool, cork and fiber board. These materials are used in a multi-layer structure where each layer is for a different purpose such as a “moisture-insulating layer” consisting of a “heat insulating layer,” a “load sustaining layer” and a “sound absorbing layer.” *See* Zeinetz '316 Patent, Col. 4, lines 8-15. The kind of layer that “foamed glass” may be used for is not taught. However, the

load sustaining layer, which is the layer that would potentially be under compression, “is made of concrete, for example.” *Id.*, Col. 4, line 14. There is no teaching that the load sustaining layer could be made of prestressed foam glass tiles as required by all the claims, let alone foam glass tiles having a prestress compression of 4,000 psi or greater as required by the rejected claims. *See* Macedo Declaration, par. 10.

In addition, to support his position that the Lagendijk ‘656 Patent discloses prestressing of a foam glass material, the Examiner points to the inner bracing cables 33, 34, the cross tie cables 36, the lower running cable 45, etc. that form the suspended roof structure in Figs. 1 and 2 of the Lagendijk ‘656 Patent as showing tension members holding foamed glass units in place, citing Col. 3, lines 30-60 and Col. 4, lines 34-37 as well as Fig. 6 of the Patent. *See* September 11, 2006 Office Action at 3 & 10. However, contrary to the Examiner’s assertion, none of the figures and text of the Lagendijk ‘656 Patent relied upon by the Examiner teaches or even suggests the prestressing of a foam glass tile under any amount of prestress compression. *See* Macedo Declaration, par. 11.

Like the Zeinetz ‘316 Patent, the Lagendijk ‘656 Patent is also directed to a roof structure, which, in the case of the Lagendijk ‘656 Patent, is composed of a wire mesh or netting with a sprayed polyurethane foam on top. *See* Lagendijk ‘656 Patent, Col. 4, lines 18-20. What the cited portion of Lagendijk ‘656 Patent suggests, at best, is the use of sprayed polyurethane foam (which is not a foam glass tile) or stiff elements of foam glass as a roof-covering material. *See* Lagendijk ‘656 Patent, Col. 4, lines 4-44. The Examiner points to the inner bracing cables 33, 34, the cross tie cables 36, the lower running cable 45, etc. that form the suspended roof structure in Figs. 1 and 2 of the

Lagendijk '656 Patent as showing "tension members," but nowhere in the Patent is there any teaching or even suggestion that those "tension members" contribute to prestressing of foam glass materials used as the roof covering materials under any amount of prestress compression. See Macedo Declaration, par. 12. These alleged "tension members" form a part of a tensioned roof structure to which a fine mesh net is anchored. See *id.*, Col. 3, lines 47-54 ("This net or both nets, together with the post-tensioning of the roof structure, have been tensioned up to the final design tension, before at least a first layer of the roof covering is applied." (emphasis added)); see also generally *id.*, Col. 6, line 42 - Col. 8, line 14. The Lagendijk '656 Patent further teaches that the roof covering material is applied on this mesh net. See *id.*, Col. 4, lines 3-10. Hence, as supported by the Macedo Declaration, those skilled in the art would understand that it is physically and technically impossible for the "tension members," the cable structure pointed by the Examiner, to provide any amount of prestress compression to the roof covering materials which are, according to the teaching of the Lagendijk '656 Patent, to stay above those "tension members" and are applied after the bars are tensioned, not before. See Lagendijk '656 Patent, Col. 9, lines 44-45; see also Macedo Declaration, par. 12.

Furthermore, Fig. 6 and Col. 9, lines 49-55 of the Lagendijk '656 Patent teach securing foam glass elements 65, which are used as part of the roof covering, to the glass-fibre mats 60, 61 by adhesive 66, thus providing an alternative means for reinforcing these foam glass materials and thereby teaching away from the prestressing as means for reinforcing these foam glass materials. By definition, this alternative

structure is again not prestressed since it is applied on top of the mesh net after the “tension members” are already in place and tensioned. Nowhere in the Lagendijk ‘656 Patent is there any showing or suggestion that the foam glass elements 65 amid the adhesive 66 shown in Fig. 6 be prestressed by any “tension members” such as the inner bracing cables 33, 34, the cross tie cables 36, the lower running cable 45, or any other component of the disclosed roof structure. See Macedo Declaration, par. 13.

Accordingly, contrary to the Examiner’s assertion, the Lagendijk ‘656 Patent does not teach or even suggest the prestressing of a foam glass tile under any amount of prestressing, let alone the prestress compression of 4,000 psi or greater.

Neither Williams ‘365 Patent, nor the Blaha ‘184 Patent, nor the Jones ‘565 Patent, nor the Elmer ‘619 Patent, nor the Ford ‘937 Patent teaches or suggests prestressing of a foam glass tile under any amount of prestress compression, let alone under prestress compression of 4,000 psi or greater. See Macedo Declaration, par. 14. The Examiner provides no contrary contention on this point in the September 11, 2006 Office Action.

In summary, none of the eight prior art references relied upon by the Examiner-- the Grady ‘037 Patent, the Zeinetz ‘316 Patent, the Lagendijk ‘656 Patent, the Williams ‘365 Patent, the Blaha ‘184 Patent, the Jones ‘565 Patent, the Elmer ‘619 Patent, the Ford ‘937 Patent-- discloses or even suggests, either individually or in combination, a prestressed foam glass tile having any amount of prestress compression, let alone a prestressed foam glass tile having a prestress compression of 4,000 psi or greater, as required by all of the independent claims involved in this Appeal, Claims 1, 23, 42 and 54. Furthermore, if an independent claim is non-obvious under 35 U.S.C. § 103, then

any claim dependent therefrom is likewise non-obvious. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988). Therefore, the Examiner has not established a *prima facie* case of obviousness of Claims 1, 5, 13, 14, 23, 27, 29-31, 37 and 42-47, 51-59 and 63-66 over the above-cited prior art under 35 U.S.C. § 103(a). Accordingly, Applicant is entitled to allowance of these claims over the Grady '037 Patent, the Zeinetz '316 Patent, the Legendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, and the Ford '937 Patent. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) ("If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent.").

**(b) Prior Art Does Not Show a Reasonable
Expectation of Success for Obtaining the
Claimed Range of Prestress Compression**

Another reason why the Examiner fails to establish a *prima facie* case of obviousness with respect to the rejected claims is that the combinations of the prior art references that the Examiner relies on do not show a reasonable expectation of success in obtaining the claimed subject matter set forth in the rejected claims for one of ordinary skill in the art. *See In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991); *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1207-08 (Fed. Cir. 1991); *In re Rinehart*, 531 F.2d 1048, 1053-54 (C.C.P.A. 1976); *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 2143.02 (8th ed. 2006).

The Examiner further supports the final rejection by stating that "[a]pplying a pre-compressive force of from 1,000 to 5,000 psi to the resulting assembled foam glass units, thus affording as much recovery from the effects of a greater degree of overload,

would have constituted a further obvious expedient to one having ordinary skill in the art at the time the invention was made.” September 11, 2006 Office Action at 4.

However, one of ordinary skill in the art would not have any reasonable expectation of success in achieving a prestress compression of 4,000 psi or greater in a prestressed foam glass tile by combining the prior art references relied upon by the Examiner, since, as discussed above, none of the prior art discloses or even suggests the prestressing of a foam glass tile under any amount of a prestress compression, let alone a prestress compression within the claimed range of 4,000 psi or greater. When the prior art does not teach how to prestress a foam glass tile under any amount of prestress compression, one of ordinary skill in the art would not be reasonably expected to succeed in obtaining the subject matter of the rejected claims, including a prestressed foam glass tile under a prestress compression of 4,000 psi or greater, merely on the basis of the prior art relied upon by the Examiner.

Accordingly, the Examiner has not established a *prima facie* case of obviousness of Claims 1, 5, 13, 14, 23, 27, 29-31, 37 and 42-47, 51-59 and 63-66 over the above-cited prior art under 35 U.S.C. § 103(a), and Applicant is therefore entitled to allowance of these claims over the Grady ‘037 Patent, the Zeinetz ‘316 Patent, the Lagendijk ‘656 Patent, the Williams ‘365 Patent, the Blaha ‘184 Patent, the Jones ‘565 Patent, the Elmer ‘619 Patent, and the Ford ‘937 Patent. *See In re Oetiker*, 977 F.2d at 1445.

**(c) Prior Art Does Not Enable the
Claimed Range of Prestress Compression**

Furthermore, to render an invention unpatentable for obviousness, the prior art must enable one of ordinary skill in the art to make and use the invention. *See In re*

Kumar, 418 F.3d 1361, 1368-69 (Fed. Cir. 2005); *see also KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 13 (U.S. Apr. 30, 2007) (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” (emphasis added)). Accordingly, even if a *prima facie* case of obviousness is deemed made with respect to the rejected claims on the basis of, *inter alia*, the Zeinetz ‘316 Patent or the Lagendijk ‘656 Patent, which Applicant contends it cannot, such case still fails in any event because neither prior art reference would enable one of ordinary skill in the art to make a prestressed foam glass tile having a prestress compression within the claimed range of 4,000 psi or greater. *See In re Kumar*, 418 F.3d at 1368 (“[W]hen a *prima facie* case of obviousness is deemed made based on similarity to a known composition or device, rebuttal may take the form of evidence that the prior art does not enable the claimed subject matter.”); *id.* at 1369 (“To render a later invention unpatentable for obviousness, the prior art must enable a person of ordinary skill in the field to make and use the later invention.”); *In re Payne*, 606 F.2d 303, 314-15 (C.C.P.A. 1979) (“[T]he presumption of obviousness based on close structural similarity is overcome where the prior art does not disclose or render obvious a method for making the claimed compound.”).

None of the prior art relied upon by the Examiner, including the Zeinetz ‘316 Patent and the Lagendijk ‘656 Patent, provides any disclosure (by way of prestress compression measurements, for example) or cite to any supporting reference that would enable one of ordinary skill in the art to prestress a foam glass tile under any amount of

prestress compression, let alone the claimed range of 4,000 psi or greater. Accordingly, even if a *prima facie* case of obviousness is deemed made based on the prior art, it is rebutted. See *In re Kumar*, 418 F.3d at 1368-69. Accordingly, based on the foregoing reason alone, Applicant respectfully requests that the rejection of Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47, 51-59 and 63-66 by the Examiner be withdrawn.

**2. Claims 1, 5, 13, 14, 23, 27, 29-31 and 37
Are Patentable Over the Prior Art**

**(a) Prior Art Does Not Teach or Suggest the
Claimed Range of Compression Strength**

To support the final rejection of Claims 1, 5, 13, 14, 23, 27, 29-31 and 37, the Examiner also takes the position that either the Williams '365 Patent or the Blaha '184 Patent suggests a foam glass tile having a compression strength of 10,000 psi or greater, as required by the rejected claims. See September 11, 2006 Office Action at 3. However, it is respectfully submitted that the Examiner's position is again erroneous. Neither reference teaches or suggests a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater. See Macedo Declaration, par. 15.

The Examiner does not dispute that none of the prior art relied upon by him discloses the claimed range of compression strength required by the rejected claims. In fact, the Examiner does not point to any portion of the prior art that discloses a foam glass tile having a compression strength of 10,000 psi or greater, because nowhere in the prior art is there any such disclosure. Rather, in support of the rejection, the Examiner merely points to the portions of the Williams '365 Patent and the Blaha '184 Patent disclosing the ranges of compression strength that do not overlap with and do not come

close to the claimed range of 10,000 psi or greater required by the rejected claims. *See id.* at 3-4 & 11.

More specifically, the Examiner points to the following portion of the Williams '365 Patent: "Such a material should be readily available, easily formed in lengths up to 100 feet, be able to withstand a stress of 5,000-8,000 psi . . ." Williams '365 Patent, Col. 1, lines 36-38 (emphasis added). This disclosed range falls short of and does not overlap at all with the claimed range of compression strength of a foam glass tile starting from 10,000 psi and higher as required by the rejected claims. This difference in compression strength is substantial. *See* Macedo Declaration, par. 16.

Moreover, Williams' '365 Patent does not even disclose "foam glass tiles," let alone "prestressed foam glass tiles" as required by the present claims. Indeed, the following portion of the Williams '365 Patent cited by the Examiner in support of his position is the evidence: "In such form, the foamed glass product can be used as a structural member in a number of industries including the housing industry as a bearing member" Williams '365 Patent, Col. 1, lines 19-22 (emphasis added); *see also* September 11, 2006 Office Action at 11. However, "such form" in the cited portion of the Williams '365 Patent refers to a "foamed glass" produced "in the form of elongate members, more particularly in the form of hollow elongate cylinders" as recited in the sentence in the Williams '365 Patent just before the cited portion. Hence, it is clear that the Williams '365 Patent is directed to an elongate structure of foam glass rather than foam glass tiles as in the present invention. In fact, the description of the preferred embodiment of the Williams '365 Patent is directed to production of foam glass in the

form of hollow elongate cylinders so that it can be used as conduit such as sewer pipe, telephone pole, or power line. See Williams '365 Patent, Col. 1, lines 14-25 & FIG. 3. However, as supported by the Macedo Declaration, those skilled in the art would understand that, unlike in the case of foam glass tiles, prestressing of these foam glass hollow elongate cylinders to be used as conduit, telephone poles, etc. would not be desirable, nor is it technically feasible or economical. See Macedo Declaration, par. 17. Accordingly, one of ordinary skill in the art would not be motivated to apply prestressing to a foam glass product described in the Williams '365 Patent, but in fact would be taught away from doing so. This is one more reason why the Examiner's reliance on the Williams '365 Patent is misplaced.

Similarly, the Examiner points to a portion in the Blaha '184 Patent disclosing a slab of cellular, agglomerated material having a compression strength "in excess of 1200 pounds per square inch." Blaha '184 Patent, Col. 3, lines 26-28. The compression strength of 1,200 psi as disclosed by the Blaha '184 Patent falls far short of 10,000 psi, the lower end of the claimed range of compression strength required by the rejected claims.

To overcome this apparent discrepancy, the Examiner further relies on a vague statement of objective taken from another different portion of the Blaha '184 Patent that the cellular material is to be "sufficiently strong to be used for structural purposes" to support his position. *Id.*, Col. 1, lines 27-28; *see also* September 11, 2006 Office Action at 11. However, such open-ended statement alone, without any adequate enabling disclosure, cannot enable one of ordinary skill in the art to achieve, with a reasonable expectation of success, the dramatic increase in compression strength of a foam glass tile

from a mere 1,200 psi as disclosed by the Blaha '184 Patent to over 10,000 psi required by the rejected claims. See Macedo Declaration, par. 18. Moreover, this statement does not teach that the resulting material can or should be prestressed. Simply put, the Blaha '184 Patent does not teach or suggest at all a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater, let alone a prestressed foam glass tile with the claimed compression strength and prestress compression.

To establish a *prima facie* case of obviousness of a claimed invention under 35 U.S.C. § 103, **all** the claim limitations must be taught or suggested by the prior art. See *CFMT, Inc.*, 349 F.3d at 1342; *In re Royka*, 490 F.2d at 985; see also MANUAL OF PATENT EXAMINING PROCEDURE § 2143.03 (8th ed. 2006). However, as shown above, none of the prior art relied upon by the Examiner, including the Williams '365 Patent and the Blaha '184 Patent, teaches or suggests the claimed range of compression strength of a foam glass tile, 10,000 psi or greater, prior to being in a prestressed condition which is one of the limitations of the rejected claims. Since the Examiner fails to establish a *prima facie* case of obviousness of Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 over the prior art under 35 U.S.C. § 103(a), Applicant is entitled to allowance of these claims. See *In re Oetiker*, 977 F.2d at 1445.

**(b) There Is No Reason to Combine the
Prior Art to Obtain the Claimed Ranges of
Compression Strength and Prestress Compression**

Another reason why the Examiner fails to establish a *prima facie* case of obviousness with respect to Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 is that there is no suggestion or motivation to combine the prior art. See *In re Rouffet*, 149 F.3d 1350, 1358

(Fed. Cir. 1998); *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 2143.01 (8th ed. 2006).

The Supreme Court held recently in *KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 14-15 (U.S. Apr. 30, 2007) that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” While warning against applying as a rigid rule, the Court found that this is a “helpful insight.” *Id.* at 14. The Court in *Teleflex* further held:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. **To facilitate review, this analysis should be made explicit.** See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“**[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.**”). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

Id. at 14 (emphasis added).

It is respectfully submitted that the Examiner's position that the combination of either the Williams '365 Patent or the Blaha '184 Patent with the other cited prior art renders the rejected claims obvious is erroneous since there exists no apparent reason to combine the prior art to obtain a prestressed foam glass tile having, *inter alia*, both a

compression strength of 10,000 psi or greater prior to being in the prestressed condition and a prestress compression of 4,000 psi or greater. Other than a mere hindsight-based contention using the invention as a roadmap to find its prior art components, the Examiner provides no actual evidence of reason for the prior art combination.

Nowhere in the Williams '365 Patent, or the Blaha '184 Patent, or any other prior art relied upon by the Examiner is there any explicit or even implicit suggestion or motivation for the prior art combination to render the claimed ranges of prestress compression and compression strength obvious. The Examiner does not make any contrary contention, nor does he provide an actual evidence that shows reason for such prior art combination.

Instead, the Examiner relies on two cases, *In re Preda*, 401 F.2d 825, 826 (C.C.P.A. 1968), and *In re Sernaker*, 702 F.2d 989, 994-95 (Fed. Cir. 1983), to support the prior art combination. See September 11, 2006 Office Action at 11. However, it is respectfully submitted that the Examiner's reliance on these cases is misplaced, even under the flexible and expansive approach recently set forth by the Supreme Court in *Teleflex*. Neither case supports the Examiner's position that a reason for combining the prior art can be found.

The Court of Customs and Patent Appeals in *In re Preda* cited by the Examiner held that "in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d at 826. However, when none of the prior art relied upon by the Examiner discloses a prestressed

foam glass tile having any amount of prestress compression, let alone the claimed range of 4,000 psi or greater and, furthermore, when none of the prior art relied upon by the Examiner discloses a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater, no one skilled in the art would reasonably be expected to draw from the prior art combination an inference that the claimed ranges of compression strength prior to being in a prestressed condition and prestress compression in a prestressed foam glass tile as set forth in the rejected claims would be desirable.

The Examiner also takes the position, citing *In re Sernaker*,¹ that “[t]he strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination.” September 11, 2006 Office Action at 11. The Examiner does not, however, explain what specific recognition or technological principle within the knowledge of one of ordinary skill in the art would motivate one with no knowledge of the present invention to make the combination of the prior art to obtain a prestressed foam glass tile having both a prestress compression within the claimed range of 4,000 psi or greater and a compression strength prior to being in a prestressed condition within

¹ However, the cited portion of *In re Sernaker* does not appear to provide any direct support for the Examiner’s statement in support of which he cites the case. Instead, the Federal Circuit in *In re Sernaker* set forth the following tests for obviousness: “(a) whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention in suit, and (b) whether the claimed invention achieved more than a combination which any or all of the prior art references suggested, expressly or by reasonable implication.” *In re Sernaker*, 702 F.2d at 994. After finding that the Patent Office Board of Appeals failed these tests, the Federal Circuit held that the Board did not correctly deduce obviousness from the combination of four references. *See id.* at 994-96. Similarly in the present case, the Examiner’s rejection based on the prior art combination would fail these tests because of the reasons set forth in this Reply.

the claimed range of 10,000 psi or greater. *See also In re Rouffet*, 149 F.3d at 1357-58 (“Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of [the] invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness.”).

In sum, lacking the showing of a reason for combining the references, such as a motivation to combine references, the Examiner has not shown a *prima facie* case of obviousness of Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 over the prior art. *See id.* at 1358. Accordingly, Applicant is entitled to allowance of these claims. *See In re Oetiker*, 977 F.2d at 1445.

(c) Prior Art Teaches Away from the Claimed Range of Prestress Compression

Even though, as discussed above, it is not disputed that none of the prior art relied upon by the Examiner discloses the range of compression strength of a foam glass tile that either overlaps with or is even close to the claimed range of compression strength required by the rejected claims, the Examiner nevertheless maintains the rejection by relying on two fairly old cases from the U.S. Court of Appeals for the Seventh Circuit, *Hobbs v. Wisconsin Power & Light Co.*, 250 F.2d 100, 107-08 (7th Cir. 1957), and *Brunswick Corp. v. Champion spark Plug Co.*, 689 F.2d 740, 750 (7th Cir.

1982).² See September 11, 2006 Office Action at 12. However, it is respectfully submitted that the Examiner's reliance on these cases is misplaced.

The Seventh Circuit in *Hobbs* held:

[A] change of degree is not patentable It is . . . true that the mere carrying forward of the original thought with a change only in form, proportion or degree, in doing the same thing the same way by substantially the same means, but with better results, is not such invention as will sustain the patent. But where different concepts, purposes and objects are involved, as we understand the law, this rule is not always to be arbitrarily applied, and when different means are employed, followed by success where failure theretofore existed, there is no basis for the application of the rule.

Hobbs, 250 F.2d at 107-08 (emphasis added) (citations and internal quotation marks omitted). As applied to the present case, there is no dispute that none of the prior art relied upon by the Examiner discloses a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater as required by the rejected claims. As supported by the Macedo Declaration, one of ordinary skill in the art would understand that none of the means disclosed in the prior art relied upon by the Examiner can possibly achieve the compression strength of 10,000 psi or greater in a foam glass tile. See Macedo Declaration, par. 15. On the other hand, with the means disclosed in the incorporated co-pending application of Applicant (Application Serial No. 10/625,071), a foam glass tile having the previously unattainable compression strength of 10,000 psi or greater can be achieved by those skilled in the art. See Macedo Declaration, par. 19.

² The Examiner also relies on these Seventh Circuit cases in support of his position that the disclosures by the Zeinetz '316 Patent and the Lagendijk '656 Patent render the claimed range of prestress compression (4,000 psi or greater) obvious to one of ordinary skill in the art. See September 11, 2006 Office Action at 12. However, the Examiner's reliance is misplaced since, as discussed above, neither the Zeinetz '316 Patent nor the Lagendijk '656 Patent discloses any amount of prestress compression for a prestressed foam glass tile, let alone the claimed range of prestress compression of 4,000 psi or greater.

Therefore, the claimed range of compression strength is much more than simply “a change of degree” in the property of the prior art foam glass tile. There is no basis for the Examiner’s application of *Hobbs* to render the claimed range of compression strength obvious in view of the prior art.

The Seventh Circuit in another case cited by the Examiner, *Brunswick Corp.*, held that making something merely stronger than the prior art, merely changing material if the properties of the material are known and expected, or merely substituting a superior material for another in an existing product is not patentable. *See Brunswick Corp.*, 689 F.2d at 750. However, the court also noted an exception to that reasoning when unexpected results or properties are involved. *See id.* at 750-51 (citing *Tracor, Inc. v. Hewlett-Packard Co.*, 519 F.2d 1288 (7th Cir. 1975)). Accordingly, the Examiner’s arbitrary application of *Brunswick Corp.*, without any further analysis, is inapposite.

In fact, the Federal Circuit has held that even when there is a presumption of obviousness based on a claimed invention that falls within a range disclosed by the prior art, such presumption can be rebutted if the prior art teaches away from the claimed invention, or if there are new and unexpected results relative to the prior art. *See Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004); *see also* MANUAL OF PATENT EXAMINING PROCEDURE 2144.05 (III) (8th ed. 2006). The Supreme Court also relied on the principle that “when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious,” and found that “the fact that the elements worked together in an unexpected and fruitful manner supported the [non-obviousness]

conclusion” *KSR Int’l Co. v. Teleflex Co.*, No. 04-1350, slip op. at 12 (U.S. Apr. 30, 2007) (citation omitted).

Accordingly, even if a *prima facie* case of obviousness is deemed made on the basis of the range of compression strength disclosed by the Williams ‘365 Patent or the Blaha ‘184 Patent, which Applicant contends it cannot in view of the lack of overlap with the claimed range, such case still fails in any event because the range of compression strength disclosed by the prior art would teach away one of ordinary skill in the art from the claimed invention set forth in the rejected claims. More specifically, the range of compression strength of foam glass product disclosed by the prior art would teach away one of ordinary skill in the art from prestressing the foam glass product under a prestress compression within the claimed range of 4,000 psi or greater.

As supported by the Macedo Declaration, it is well known to one of ordinary skill in the art that by applying prestressing, the resulting compression strength of the prestressed product will decrease by the prestress amount while the resulting tension strength will increase by the same amount. It is also well understood by one of ordinary skill in the art that the optimum amount of prestress level is set by making the tension strength comparable to the compression strength as the result of prestressing. In other words, the optimum prestress level is one half of the difference between the compression strength and the tension strength under non-prestressed condition. See Macedo Declaration, par. 20; see also generally EDWARD G. NAWY, PRESTRESSED CONCRETE: A FUNDAMENTAL APPROACH 8-13 (1989). Based on these principles, Dr. Macedo in his Declaration finds that the optimum prestress level for the foam glass tiles described in

TABLE 1 of the present application is calculated to be approximately 44% of the compression strength of the foam glass tile prior to being in the prestressed condition. For example, for a foam glass tile having a compression strength of 10,000 psi prior to being in a prestressed condition, the corresponding optimum prestress compression is approximately 4,400 psi; for the one having a compressional strength of 12,500 psi prior to being in a prestressed condition, the corresponding optimum prestress compression is approximately 5,500 psi, etc. See Macedo Declaration, par. 20.

None of the prior art relied upon by the Examiner discloses the range of compression strength of a foam glass tile that reaches anywhere near 10,000 psi. At best, the greatest amount of compression strength disclosed by the prior art is 8,000 psi, which is casually mentioned by the Williams '365 Patent, without any enabling disclosure, for an elongated tube, not a foam glass tile.³ Based on the principles discussed above, for a foam glass tile having 8,000 psi, as supported by the Macedo Declaration, one of ordinary skill in the art would estimate that the corresponding optimum prestress compression would be about 44% of 8,000 psi, or 3,500 psi. See Macedo Declaration, par. 21.

Accordingly, even assuming that the Williams '365 Patent had provided enabling disclosure for one of ordinary skill in the art to achieve a foam glass tile having a compression strength of up to 8,000 psi, which Applicant contends that it does not, such person would not apply a prestress compression of more than 3,500 psi in any event, let alone 4,000 psi or greater, to this foam glass tile since that would deviate from the

³ This difference in structure leads to different geometries which affect the relative strength of the resulting materials.

optimum prestress compression level as understood by him or her. Such person would instead apply a prestress compression of at most 3,500 psi or less, at best, corresponding to what would be an optimum prestress compression based on the compression strength disclosed by the prior art relied upon by the Examiner, including the Williams '365 Patent. See Macedo Declaration, par. 21.

Accordingly, even if a *prima facie* case of obviousness is deemed made with respect to Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 based on, *inter alia*, the range of compression strength of a foam glass material disclosed by the Williams '365 Patent or the Blaha '184 Patent, contrary to Applicant's contention, such case is rebutted in any event by the fact that the prior art range of compression strength teaches away one of ordinary skill in the art from applying a prestress compression of 4,000 psi or greater to a foam glass tile as required by the rejected claims. Hence, based on the foregoing reason, it is respectfully requested that the rejection of Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 by the Examiner be withdrawn.

**(d) Prior Art Does Not Enable the
Claimed Range of Compression Strength**

Furthermore, to render an invention unpatentable for obviousness, the prior art must enable one of ordinary skill in the art to make and use the invention. See *In re Kumar*, 418 F.3d at 1368-69; see also *KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 13 (U.S. Apr. 30, 2007) (finding that obviousness of a technique requires that its actual application be within the skill of a person of ordinary skill in the art). Accordingly, even if a *prima facie* case of obviousness is deemed made with respect to the rejected claims based on the teachings of the Williams '365 Patent or the Blaha '184 Patent, which

Applicant contends that it cannot, such *prima facie* case is rebutted because neither prior art reference would enable one of ordinary skill in the art to make a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater. *See id.* at 1368 (“[W]hen a *prima facie* case of obviousness is deemed made based on similarity to a known composition or device, rebuttal may take the form of evidence that the prior art does not enable the claimed subject matter.”); *id.* at 1369 (“To render a later invention unpatentable for obviousness, the prior art must enable a person of ordinary skill in the field to make and use the later invention.”); *In re Payne*, 606 F.2d at 314-15 (“[T]he presumption of obviousness based on close structural similarity is overcome where the prior art does not disclose or render obvious a method for making the claimed compound.”).

The Williams ‘365 Patent does not provide any disclosure (by way of compression strength measurements, for example) or cite to any supporting reference that would enable one of ordinary skill in the art to achieve a foam glass tile having a compression strength of 10,000 psi or greater as required by the rejected claims, let alone the elongated tube having a length of up to 100 feet and a compression strength of up to 8,000 psi, which the Williams ‘365 Patent casually mentions without any support. *See* Williams ‘365 Patent, Col. 1, lines 14-25 and 36-38. As supported by the Macedo Declaration, such feat would be considered impossible even with today’s foam glass technology, let alone in 1978, the issue date of the Williams ‘365 Patent. *See* Macedo Declaration, par. 22.

In fact, as supported by the Macedo Declaration, to one skilled in the art, such claim by the Williams '365 Patent would appear inconsistent with its later description of elongate foamed ceramic products made under the procedure it teaches. See Macedo Declaration, par. 23. The elongate foamed ceramic product that the Williams '365 Patent teaches how to make has a cellular structure of closed, elongate bubbles with a diameter ranging from 0.01 mm to 1 cm and a length ranging from 2 mm to 5 cm. See Williams '365 Patent, Col. 2, lines 19-33. According to the Macedo Declaration, while a small pore size by itself may not be a sufficient condition for a strong foam glass product, it is a necessary condition and a foam glass product having largest bubbles reaching 1 cm and 5 cm in diameter and length, respectively, can never achieve a compression strength as high as 8,000 psi, let alone the claimed range of 10,000 psi or greater, that is sufficiently strong for the purpose of prestress compression within the claimed range. It is also noted that none of the examples described by the Williams '365 Patent has an average pore size less than 1.0 mm. See, e.g., *id.*, Col. 6, lines 62-63 and Col. 8, lines 5-6. None of the examples provides any compression strength data, but one skilled in the art would understand that in view of the bubble sizes reported by the Williams '365 Patent, none of the examples described in the Williams '365 Patent can achieve a compression strength within the claimed range of 10,000 psi or greater. See Macedo Declaration, par. 23.

Despite the dubiousness of such feat of achieving a compression strength of up to 8,000 psi, if it would have been possible at all, the Williams '365 Patent is silent on how to go about achieving it. Nowhere in the description of six examples by the Williams

'365 Patent is there any indication of the success of such feat. See Macedo Declaration, par. 22. Therefore, the Williams '365 Patent, which would not enable one of ordinary skill in the art to reproduce what the Examiner claims it discloses, *i.e.*, a foam glass product having a compression strength of 8,000 psi, certainly would not enable such person to make a foam glass tile having an even greater compression strength of 10,000 psi or greater.

Similarly, despite the claim of a slab of cellular material having a compression strength "in excess of" 1,200 psi, nowhere in the Blaha '184 Patent is there any disclosure that would enable one of ordinary skill in the art to produce a foam glass tile having a compression strength of even 2,000 psi or 3,000 psi, let alone 10,000 psi or greater as required by the rejected claims.

In summary, even if a *prima facie* case of obviousness is deemed made with respect to Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 based on, *inter alia*, the range of compression strength of a foam glass material disclosed by the Williams '365 Patent or the Blaha '184 Patent, which Applicant contends it cannot, such case still fails in any event in view of the fact that neither the Williams '365 Patent nor the Blaha '184 Patent enables one of ordinary skill in the art to produce a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater as required by the rejected claims. Accordingly, based on the foregoing reason, it is respectfully requested that the rejection of Claims 1, 5, 13, 14, 23, 27, 29-31 and 37 by the Examiner be withdrawn.

**3. Claims 42-47, 51-59 and 63-66
Are Patentable Over the Prior Art**

**(a) There Is No Reason to Combine the
Prior Art to Obtain the Claimed Ranges
of Pore Size and Prestress Compression**

To support the rejection of Claims 42-47, 51-59 and 63-66, the Examiner also takes the position that each of the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent discloses foam glass components having a pore size of less than 1.0 mm. *See* September 11, 2006 Office Action at 4. However, it is respectfully submitted that the Examiner's position that the combination of any of the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent with the other cited prior art renders those claims obvious is erroneous since there exists no apparent reason to combine the prior art to obtain a prestressed foam glass tile having, *inter alia*, both a prestress compression of 4,000 psi or greater and an average pore size of 1.0 mm or less. Other than a mere hindsight-based contention using the invention as a roadmap to find its prior art components, the Examiner provides no actual evidence of reason for the prior art combination. As discussed above, while not a rigid rule, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," and it is a "helpful insight." *KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 14-15 (U.S. Apr. 30, 2007).

Nowhere in the Jones '565 Patent, or the Elmer '619 Patent, or the Ford '937 Patent, or any other prior art relied upon by the Examiner is there any explicit or even implicit reason for the prior art combination to render the claimed ranges of both prestress compression and pore size obvious, since none of these references teaches that

their disclosed pore sizes lead to a foam glass product strong enough for the purpose of prestress compression within the claimed range. See Macedo Declaration, pars. 24-27. The Examiner does not make any contrary contention, nor does he provide an actual evidence that shows reason for such prior art combination.

Nevertheless, the Examiner relies on two cases, *In re Preda*, 401 F.2d 825, 826 (C.C.P.A. 1968), and *In re Sernaker*, 702 F.2d 989, 994-95 (Fed. Cir. 1983), to support the prior art combination. See September 11, 2006 Office Action at 11. However, it is respectfully submitted that the Examiner's reliance on these cases is misplaced, even under the flexible and expansive approach recently set forth by the Supreme Court in *Teleflex*. Neither case supports the Examiner's position that a reason to combine the prior art can be found.

The Court of Customs and Patent Appeals in *In re Preda* held that "in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d at 826. However, when none of the prior art relied upon by the Examiner discloses or even suggests a prestressed foam glass tile having any amount of prestress compression, let alone the claimed range of 4,000 psi or greater, no one skilled in the art would reasonably be expected to draw from the prior art combination, including the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent, an inference that the claimed ranges of prestress compression and pore size in a prestressed foam glass tile as set forth in the rejected claims would be desirable.

The Examiner also takes the position, citing *In re Sernaker*,⁴ that “[t]he strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination.” September 11, 2006 Office Action at 11. The Examiner does not, however, explain what specific recognition or technological principle within the knowledge of one of ordinary skill in the art would motivate one with no knowledge of the present invention to make the combination of the prior art to obtain a prestressed foam glass tile having both a prestress compression within the claimed range of 4,000 psi or greater and an average pore size within the claimed range of 1.0 mm or less. *See also In re Rouffet*, 149 F.3d at 1357-58 (“Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of [the] invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness.”).

⁴ However, the cited portion of *In re Sernaker* does not appear to provide any direct support for the Examiner’s statement in support of which he cites the case. Instead, the Federal Circuit in *In re Sernaker* set forth the following tests for obviousness: “(a) whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention in suit, and (b) whether the claimed invention achieved more than a combination which any or all of the prior art references suggested, expressly or by reasonable implication.” *In re Sernaker*, 702 F.2d at 994. After finding that the Patent Office Board of Appeals failed these tests, the Federal Circuit held that the Board did not correctly deduce obviousness from the combination of four references. *See id.* at 994-96. Likewise, the Examiner’s final rejection based on the prior art combination would fail these tests because of the reasons set forth in this Section of the Appeal Brief.

Furthermore, Applicant's disclosure teaches a way in which foam glass tiles having a pore size of less than 1.0 mm are strong enough to have the claimed compression strength prior to prestressing and the claimed prestress compression. At best, the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent, upon which the Examiner also relies, teach that small pores can exist in foam glass materials, but, unlike the present invention, none of them teaches or even suggests that the disclosed pore sizes lead to a foam glass tile strong enough for the purpose of prestress compression within the claimed range. Nowhere in any of the prior art references relied upon by the Examiner is there any teaching or even suggestion that foam glass tiles made with small pore sizes in an appropriate manner can also have the compression and prestress strengths taught and claimed by Applicant in the present application. See Macedo Declaration, pars. 24-27. Absent such teachings, a *prima facie* case of obviousness over the rejected claims cannot be established.

In sum, lacking the showing of a reason for combining the references, such as a motivation to combine references, it is respectfully submitted that the Examiner has not shown a *prima facie* case of obviousness of Claims 42-47, 51-59 and 63-66 over the prior art. See *id.* at 1358. Accordingly, for the foregoing reason alone, Applicant is entitled to allowance of these claims. See *In re Oetiker*, 977 F.2d at 1445.

Based on at least the foregoing reasons, Applicant respectfully requests that the Examiner's rejection of Claims 1, 5, 13, 14, 23, 27, 29-31, 37, 42-47, 51-59 and 63-66 over the combinations of the Grady '037 Patent, Zeinetz '316 Patent, Lagendijk '656

Patent, Williams '365 Patent, Blaha '184 Patent, Jones '565 Patent, Elmer '619 Patent and Ford '937 Patent be withdrawn and that these claims be promptly allowed.

B. In the September 11, 2006 Office Action, the Examiner rejected Claims 1, 5, 13, 14, 42-47 and 51-53 as being unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 3,430,397 to Ellis ("the Ellis '397 Patent") in view of either the Zeinetz '316 Patent or the Lagendijk '656 Patent when considering either the Williams '365 Patent or the Blaha '184 Patent, and further considering any of the Jones '565 Patent, the Elmer '619 Patent, and the Ford '937 Patent. *See* September 11, 2006 Office Action at 5-7.

Applicant respectfully traverses this rejection for the following reasons.

It is respectfully submitted that none of the combinations of the above references relied upon by the Examiner renders Claims 1, 5, 13, 14, 42-47 and 51-53 obvious under the flexible approach recently set forth by the U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, No. 04-1350, 2007 U.S. LEXIS 4745, slip op. (U.S. Apr. 30, 2007), since the Examiner has not provided any evidence that the alleged combinations do no more than yield predictable results leading to the claimed invention set forth in these claims. *See id.* at 12-13. Furthermore, even if the combinations were obvious, which Applicant contends that they are not, that still does not establish that the claims encompass obvious subject matter. *Cf. id.* at 19-20. In addition, the Examiner has not shown that the practice of the claimed invention based on the teachings of the alleged combinations is within the skill of a person of ordinary skill in the art. *See id.* at 13. The fact that some of the above references in fact teach away from the alleged combinations

further supports Applicant's position that the elements of the claimed invention set forth in the claims work together in an unexpected and fruitful manner and are therefore not obvious over the above references relied upon by the Examiner. *See id.* at 12.

**1. Claims 1, 5, 13, 14, 42-47 and 51-53
Are Patentable Over the Prior Art**

**(a) Prior Art Does Not Teach or Suggest the
Claimed Range of Prestress Compression**

In the final rejection of Claims 1, 5, 13, 14, 42-47 and 51-53 under 35 U.S.C. § 103(a), the Examiner relies on another 12 possible combinations of eight prior art references: The Ellis '397 Patent in combination with the Zeinetz '316 Patent or the Lagendijk '656 Patent, further in combination with the Williams '365 Patent or the Blaha '184 Patent, and further in combination with the Jones '565 Patent, the Elmer '619 Patent, or the Ford '937 Patent. *See* September 11, 2006 Office Action at 5-6. Even with such extensive combinations of multiple references, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness.

By the Examiner's own admission, the Ellis '397 Patent does not disclose a foam glass tile. *See* September 11, 2006 Office Action at 6; *see also* Macedo Declaration, par. 6. For the reasons set forth above in Section A.1(a) of the Arguments of this Reply, none of the eight prior art references relied upon by the Examiner--the Ellis '397 Patent, the Zeinetz '316 Patent, the Lagendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, the Ford '937 Patent-- discloses or even suggests, either individually or in combination, a prestressed foam glass tile having any amount of prestress compression, let alone a prestress foam glass tile having a prestress compression of 4,000 psi or greater, a required limitation of independent

Claims 1 and 42. Furthermore, if an independent claim is non-obvious under 35 U.S.C. § 103, then any claim dependent therefrom is likewise non-obvious. *See In re Fine*, 837 F.2d at 1076. Therefore, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness of Claims 1, 5, 13, 14, 42-47 and 51-53 over the above-cited prior art under 35 U.S.C. § 103(a). Accordingly, Applicant is entitled to allowance of these claims over the Ellis '397 Patent, the Zeinetz '316 Patent, the Legendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, and the Ford '937 Patent. *See In re Oetiker*, 977 F.2d at 1445.

**(b) Prior Art Does Not Show a Reasonable
Expectation of Success for Obtaining the
Claimed Range of Prestress Compression**

For the reasons set forth above in Section A.1(b) of the Arguments of this Reply, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness with respect to the rejected claims because the combinations of the prior art references that the Examiner relies on do not show a reasonable expectation of success in obtaining the claimed subject matter for one of ordinary skill in the art. *See In re Vaeck*, 947 F.2d at 493; *Amgen*, 927 F.2d at 1207-08; *In re Rinehart*, 531 F.2d at 1053-54; *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 2143.02 (8th ed. 2006). Accordingly, Applicant is entitled to allowance of Claims 1, 5, 13, 14, 42-47 and 51-53 on this Appeal over the Ellis '397 Patent, the Zeinetz '316 Patent, the Legendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, and the Ford '937 Patent. *See In re Oetiker*, 977 F.2d at 1445.

**(c) Prior Art Does Not Enable the
Claimed Range of Prestress Compression**

Furthermore, to render an invention unpatentable for obviousness, the prior art must enable one of ordinary skill in the art to make and use the invention. *See In re Kumar*, 418 F.3d at 1368-69; *see also KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 13 (U.S. Apr. 30, 2007) (finding that obviousness of a technique requires that its actual application be within the skill of a person of ordinary skill in the art). For the reasons set forth above in Section A.1(c) of the Arguments in this Reply, even if a *prima facie* case of obviousness is deemed made with respect to the rejected claims on the basis of, *inter alia*, the Zeinetz '316 Patent or the Lagendijk '656 Patent, which Applicant contends it cannot, such case still fails in any event because neither prior art reference enables one of ordinary skill in the art to make a prestressed foam glass tile having a prestress compression within the claimed range of 4,000 psi or greater. Therefore, based on the foregoing reason, it is respectfully requested that the final rejection of Claims 1, 5, 13, 14, 42-47 and 51-53 by the Examiner be withdrawn.

2. Claims 1, 5, 13 and 14 Are Patentable Over the Prior Art

**(a) Prior Art Does Not Teach or Suggest the
Claimed Range of Compression Strength**

To support the rejection of Claims 1, 5, 13 and 14, the Examiner also takes the position that either the Williams '365 Patent or the Blaha '184 Patent suggests a foam glass tile having a compression strength of 10,000 psi or greater, as required by the rejected claims. *See* September 11, 2006 Office Action at 6. However, for the reasons set forth above in Section A.2(a) of the Arguments in this Reply, none of the prior art relied upon by the Examiner, including the Williams '365 Patent and the Blaha '184

Patent, teaches or suggests a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater prior to being in a prestressed condition which is one of the limitations of the rejected claims. Since the Examiner has failed to establish a *prima facie* case of obviousness of Claims 1, 5, 13 and 14 over the prior art under 35 U.S.C. § 103(a), Applicant is entitled to allowance of these claims. See *In re Oetiker*, 977 F.2d at 1445.

**(b) There Is No Reason to Combine the
Prior Art to Obtain the Claimed Ranges of
Compression Strength and Prestress Compression**

Another reason why the Examiner fails to establish a *prima facie* case of obviousness with respect to Claims 1, 5, 13 and 14 is that there is no suggestion or motivation to combine the prior art. See *In re Rouffet*, 149 F.3d at 1358; see also MANUAL OF PATENT EXAMINING PROCEDURE § 2143.01 (8th ed. 2006). For the reasons set forth above in Section A.2(b) of the Arguments in this Reply, the Examiner fails to show that there exists a suggestion or motivation to combine the prior art to obtain a prestressed foam glass tile having a prestress compression with the claimed range of 4,000 psi or greater and a compression strength prior to being in a prestressed condition within the claimed range of 10,000 psi or greater. Accordingly, for the foregoing reason alone, Applicant is entitled to allowance of Claims 1, 5, 13 and 14. See *In re Oetiker*, 977 F.2d at 1445.

**(c) Prior Art Teaches Away From the
Claimed Range of Prestress Compression**

For the reasons set forth above in Section A.2(c) of the Arguments in this Reply, even if a *prima facie* case of obviousness is deemed made with respect to Claims 1, 5, 13

and 14 based on, *inter alia*, the range of compression strength of a foam glass material disclosed by the Williams '365 Patent or the Blaha '184 Patent, which Applicant contends it cannot, such case is rebutted in any event by the fact that the prior art range of compression strength teaches away one of ordinary skill in the art from applying a prestress compression within the claimed range of 4,000 psi or greater to a foam glass tile. Hence, based on the foregoing reason, it is respectfully requested that the rejection of Claims 1, 5, 13 and 14 by the Examiner be withdrawn.

**(d) Prior Art Does Not Enable the
Claimed Range of Compression Strength**

Furthermore, to render an invention unpatentable for obviousness, the prior art must enable one of ordinary skill in the art to make and use the invention. *See In re Kumar*, 418 F.3d at 1368-69; *see also KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 13 (U.S. Apr. 30, 2007) (finding that obviousness of a technique requires that its actual application be within the skill of a person of ordinary skill in the art). For the reasons set forth above in Section A.2(d) of the Arguments in this Reply, even if a *prima facie* case of obviousness is deemed made with respect to Claims 1, 5, 13 and 14 based on, *inter alia*, the range of compression strength of a foam glass material disclosed by the Williams '365 Patent or the Blaha '184 Patent, which Applicant contends it cannot, such case still fails in any event in view of the fact that neither the Williams '365 Patent nor the Blaha '184 Patent enables one of ordinary skill in the art to produce a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater as required by the rejected claims. Accordingly, it is respectfully requested that the rejection of Claims 1, 5, 13 and 14 by the Examiner be withdrawn.

3. Claims 42-47 and 51-53 Are Patentable Over the Prior Art

**(a) There Is No Reason to Combine the
Prior Art to Obtain the Claimed Ranges
of Pore Size and Prestress Compression**

To support the final rejection of Claims 42-47 and 51-53, the Examiner also takes the position that each of the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent discloses foam glass components having a pore size of less than 1.0 mm. See September 11, 2006 Office Action at 6. However, for the reasons set forth above in Section A.3(a) of the Arguments in this Reply, it is respectfully submitted that the Examiner's position that the combination of any of the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent with the other cited prior art renders those claims obvious is erroneous since there exists no suggestion or motivation to combine the prior art to obtain a prestressed foam glass tile having, *inter alia*, both a prestress compression of 4,000 psi or greater and an average pore size of 1.0 mm or less. Lacking a motivation to combine references, the Examiner has not shown a *prima facie* case of obviousness of Claims 42-47 and 51-53 over the prior art. See *In re Rouffet*, 149 F.3d at 1358. Accordingly, Applicant is entitled to allowance of Claims 42-47 and 51-53 over the prior art. See *In re Oetiker*, 977 F.2d at 1445.

Based on at least the foregoing reasons, Applicant respectfully requests that the Examiner's rejection of Claims 1, 5, 13, 14, 42-47 and 51-53 over the combinations of the Ellis '397 Patent, Zeinetz '316 Patent, Lagendijk '656 Patent, Williams '365 Patent, Blaha '184 Patent, Jones '565 Patent, Elmer '619 Patent and Ford '937 Patent be withdrawn and that these claims be promptly allowed.

C. In the September 11, 2006 Office Action, the Examiner rejected Claims 23, 27, 29-31, 37 and 54-59 and 63-66 as being unpatentable under 35 U.S.C. § 103(a) over the Ellis '397 Patent in view of either the Zeinetz '316 Patent or the Legendijk '656 Patent when considering either the Williams '365 Patent or the Blaha '184 Patent and further considering any of the Jones '565 Patent, the Elmer '619 Patent, and the Ford '937 Patent as applied to Claims 1, 5, 13, 14, 42-47 and 51-53, and further in view of the Grady '037 Patent. See September 11, 2006 Office Action at 8-9. Applicant respectfully traverses this rejection for the following reasons.

It is respectfully submitted that none of the combinations of the above references relied upon by the Examiner renders Claims 23, 27, 29-31, 37 and 54-59 and 63-66 obvious under the flexible approach recently set forth by the U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, No. 04-1350, 2007 U.S. LEXIS 4745, slip op. (U.S. Apr. 30, 2007), since the Examiner has not provided any evidence that the alleged combinations do no more than yield predictable results leading to the claimed invention set forth in these claims. See *id.* at 12-13. Furthermore, even if the combinations were obvious, which Applicant contends that they are not, that still does not establish that the claims encompass obvious subject matter. Cf. *id.* at 19-20. In addition, the Examiner has not shown that the practice of the claimed invention based on the teachings of the alleged combinations is within the skill of a person of ordinary skill in the art. See *id.* at 13. The fact that some of the above references in fact teach away from the alleged combinations further supports Applicant's position that the elements of the claimed invention set forth in the claims work together in an unexpected and fruitful manner and

are therefore not obvious over the above references relied upon by the Examiner. *See id.* at 12.

**1. Claims 23, 27, 29-31, 37, 54-59 and 63-66
Are Patentable Over the Prior Art**

**(a) Prior Art Does Not Teach or Suggest the
Claimed Range of Prestress Compression**

In the final rejection of Claims 23, 27, 29-31, 37, 54-59 and 63-66 under 35 U.S.C. § 103(a), the Examiner relies on 12 possible combinations of nine prior art references: The Ellis '397 Patent in combination with the Zeinetz '316 Patent or the Lagendijk '656 Patent, further in combination with the Williams '365 Patent or the Blaha '184 Patent, and further in combination with the Jones '565 Patent, the Elmer '619 Patent, or the Ford '937 Patent as applied to Claims 1-5, 13, 14 and 42-53, and further in combination with the Grady '037 Patent. *See* September 11, 2006 Office Action at 8. Even with such extensive combinations of multiple references, for the reasons set forth above in Section A.1(a) and B.1(a) of the Arguments in this Reply, none of the nine prior art references relied upon by the Examiner--the Ellis '397 Patent, the Zeinetz '316 Patent, the Lagendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, the Ford '937 Patent, and the Grady '037 Patent--discloses or even suggests, either individually or in combination, a prestressed foam glass tile having any amount of prestress compression, let alone a prestressed foam glass tile having a prestress compression of 4,000 psi or greater, a required limitation of independent Claims 23 and 54. Furthermore, if an independent claim is non-obvious under 35 U.S.C. § 103, then any claim dependent therefrom is likewise non-obvious. *See In re Fine*, 837 F.2d at 1076. Therefore, it is respectfully submitted that the Examiner

has not established a *prima facie* case of obviousness of Claims 23, 27, 29-31, 37, 54-59 and 63-66 over the above-cited prior art under 35 U.S.C. § 103(a). For the foregoing reason alone, Applicant is entitled to allowance of these claims over the Ellis '397 Patent, the Zeinetz '316 Patent, the Lagendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, the Ford '937 Patent and the Grady '037 Patent. *See In re Oetiker*, 977 F.2d at 1445.

**(b) Prior Art Does Not Show a Reasonable
Expectation of Success for Obtaining the
Claimed Range of Prestress Compression**

For the reasons set forth above in Section A.1(b) of the Arguments in this Reply, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness with respect to Claims 23, 27, 29-31, 37, 54-59 and 63-66 because the combinations of the prior art references that the Examiner relies on do not show a reasonable expectation of success in obtaining the claimed subject matter for one of ordinary skill in the art. *See In re Vaeck*, 947 F.2d at 493; *Amgen*, 927 F.2d at 1207-08; *In re Rinehart*, 531 F.2d at 1053-54; *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 2143.02 (8th ed. 2006). For the foregoing reason alone, Applicant is entitled to allowance of Claims 23, 27, 29-31, 37, 54-59 and 63-66 over the Ellis '397 Patent, the Zeinetz '316 Patent, the Lagendijk '656 Patent, the Williams '365 Patent, the Blaha '184 Patent, the Jones '565 Patent, the Elmer '619 Patent, the Ford '937 Patent and the Grady '037 Patent. *See In re Oetiker*, 977 F.2d at 1445.

**(c) Prior Art Does Not Enable the
Claimed Range of Prestress Compression**

To render an invention unpatentable for obviousness, the prior art must enable one of ordinary skill in the art to make and use the invention. *See In re Kumar*, 418 F.3d at 1368-69; *see also KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 13 (U.S. Apr. 30, 2007) (finding that obviousness of a technique requires that its actual application be within the skill of a person of ordinary skill in the art). For the reasons set forth above in Section A.1(c) of the Arguments in this Reply, even if a *prima facie* case of obviousness is deemed made with respect to the rejected claims on the basis of, *inter alia*, the Zeinetz '316 Patent or the Lagendijk '656 Patent, which Applicant contends it cannot, such case still fails in any event because neither prior art reference would enable one of ordinary skill in the art to make a prestressed foam glass tile having a prestress compression within the claimed range of 4,000 psi or greater. Based on the foregoing reason, it is respectfully requested that the rejection of Claims 23, 27, 29-31, 37, 54-59 and 63-66 over the prior art by the Examiner be withdrawn.

2. Claims 23, 27, 29-31 and 37 Are Patentable Over the Prior Art

**(a) Prior Art Does Not Teach or Suggest
the Claimed Range of Compression Strength**

To support the final rejection of Claims 23, 27, 29-31 and 37, the Examiner again relies on either the Williams '365 Patent or the Blaha '184 Patent. *See* September 11, 2006 Office Action at 8. However, for the reasons set forth above in Section A.2(a) of the Arguments in this Reply, none of the prior art relied upon by the Examiner, including the Williams '365 Patent and the Blaha '184 Patent, teaches or suggests a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater prior to

being in a prestressed condition, which is one of the limitations of the rejected claims. Since the Examiner fails to establish a *prima facie* case of obviousness of Claims 23, 27, 29-31 and 37 over the prior art under 35 U.S.C. § 103(a), Applicant is entitled to allowance of these claims. See *In re Oetiker*, 977 F.2d at 1445.

**(b) There Is No Reason to Combine the
Prior Art to Obtain the Claimed Ranges of
Compression Strength and Prestress Compression**

Another reason why the Examiner fails to establish a *prima facie* case of obviousness with respect to Claims 23, 27, 29-31 and 37 is that there is no suggestion or motivation to combine the prior art. See *In re Rouffet*, 149 F.3d at 1358; see also MANUAL OF PATENT EXAMINING PROCEDURE § 2143.01 (8th ed. 2006). For the reasons set forth above in Section A.2(b) of the Arguments in this Reply, it is respectfully submitted that the Examiner has failed to show that there exists a suggestion or motivation to combine the prior art to obtain a prestressed foam glass tile having a prestress compression with the claimed range of 4,000 psi or greater and a compression strength prior to being in the prestressed condition within the claimed range of 10,000 psi or greater. Accordingly, Applicant is entitled to allowance of Claims 23, 27, 29-31 and 37 over the prior art. See *In re Oetiker*, 977 F.2d at 1445.

**(c) Prior Art Teaches Away From the
Claimed Range of Prestress Compression**

For the reasons set forth above in Section A.2(c) of the Arguments in this Reply, even if a *prima facie* case of obviousness is deemed made with respect to Claims 23, 27, 29-31 and 37 based on, *inter alia*, the range of compression strength of a foam glass material disclosed by the Williams '365 Patent or the Blaha '184 Patent, which Applicant

contends it cannot, such case is rebutted in any event by the fact that the prior art range of compression strength teaches away one of ordinary skill in the art from applying the claimed prestress compression of 4,000 psi or greater to a foam glass tile as required by the rejected claims. Hence, it is respectfully requested that the rejection of Claims 23, 27, 29-31 and 37 over the prior art by the Examiner be withdrawn.

**(d) Prior Art Does Not Enable the
Claimed Range of Compression Strength**

To render an invention unpatentable for obviousness, the prior art must enable one of ordinary skill in the art to make and use the invention. *See In re Kumar*, 418 F.3d at 1368-69; *see also KSR Int'l Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 13 (U.S. Apr. 30, 2007) (finding that obviousness of a technique requires that its actual application be within the skill of a person of ordinary skill in the art). For the reasons set forth above in Section A.2(d) of the Arguments in this Reply, even if a *prima facie* case of obviousness is deemed made with respect to Claims 23, 27, 29-31 and 37 based on, *inter alia*, the range of compression strength of a foam glass material disclosed by the Williams '365 Patent or the Blaha '184 Patent, which Applicant contends it cannot, such case still fails in any event in view of the fact that neither the Williams '365 Patent nor the Blaha '184 Patent enables one of ordinary skill in the art to produce a foam glass tile having a compression strength within the claimed range of 10,000 psi or greater as required by the rejected claims. For the foregoing reason, Applicant respectfully requests that the rejection of Claims 23, 27, 29-31 and 37 over the prior art by the Examiner be withdrawn.

3. Claims 54-59 and 63-66 Are Patentable Over the Prior Art

**(a) There Is No Reason to Combine the
Prior Art to Obtain the Claimed Ranges of
Pore Size and Prestress Compression**

To support the rejection of Claims 54-59 and 63-66, the Examiner relies on the prior art combination including the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent. See September 11, 2006 Office Action at 8. However, for the reasons set forth above in Section A.3(a) of the Arguments in this Reply, it is respectfully submitted that the Examiner's position that the combination of any of the Jones '565 Patent, the Elmer '619 Patent and the Ford '937 Patent with the other cited prior art renders those claims obvious is erroneous since there exists no suggestion or motivation to combine the prior art to obtain a prestressed foam glass tile having, *inter alia*, both a prestress compression of 4,000 psi or greater and an average pore size of 1.0 mm or less. Lacking a motivation to combine references, it is respectfully submitted that the Examiner has not shown a *prima facie* case of obviousness of Claims 54-59 and 63-66 over the prior art. See *In re Rouffet*, 149 F.3d at 1358. Accordingly, Applicant is entitled to allowance of these claims over the prior art. See *In re Oetiker*, 977 F.2d at 1445.

Based on at least the foregoing reasons, Applicant respectfully requests that the Examiner's rejection of Claims 23, 27, 29-31, 37 and 54-59 and 63-66 over the combinations of the Ellis '397 Patent, Zeinetz '316 Patent, Lagendijk '656 Patent, Williams '365 Patent, Blaha '184 Patent, Jones '565 Patent, Elmer '619 Patent, Ford '937 Patent and Grady '037 Patent be withdrawn and that these claims be promptly allowed.

* * *

In view of the foregoing remarks, Applicant respectfully requests that a timely Notice of Allowance with respect to all of the pending claims be issued in this case.

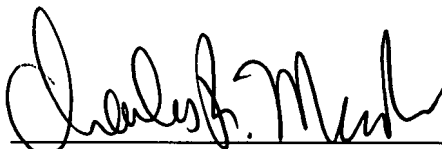
Included herewith are (1) a Communication, (2) a Request for Continued Examination, (3) a copy of the Declaration Under 37 C.F.R. § 1.132 signed by Applicant, (4) a Petition for a Two Month Extension of Time, and (5) a check in the amount of \$620.00 to cover the fee (\$395.00) for filing the Request for Continued Examination and the fee (\$225.00) for the one-month extension of time for a small entity. No additional fees or extensions of time are believed to be due in connection with filing of this Reply. However, authorization is given hereby to charge Deposit Account No. 01-1785 for any deficiency in fees necessary to preserve the pendency of the subject application, or to credit the same in case of overpayment.

Should the Examiner believe that a telephone discussion would be helpful to expedite prosecution, he is invited to call the undersigned attorney at any convenient time.

Respectfully submitted,

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Dated: New York, New York
May 2, 2007

By: 
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